UNITED STATES PATENT AND TRADEMARK OFFICE

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EXAMINER
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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Application Number: 10/600,221
Filing Date: June 19, 2003
Appellant(s): HRLE ET AL.

G. Marlin Knight
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 12/15/2006 appealing from the Office action

mailed 05/19/2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial

proceedings which will directly affect or be directly affected by or have a bearing on the

Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection

contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is

correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

| 5778388 | Kawamura | 7-1998 |
| 6785696 B2 | Mosher | 8-2004 |

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

Claim 1 – 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Kawamura et al. (Kawamura hereinafter) (US Patent No. 5,778,388) in view of Mosher,

Jr. et al. (Mosher hereinafter) (US Patent No. 6,785,696 B2).

Regarding Claim 1, Kawamura discloses a database management system

comprising:

a mainline database system that makes modifications to data in the database

management system using a write-ahead logging protocol (Col. 6, lines 36 – 42,

Kawamura); stores data on a first set of storage volumes (Col. 5, lines 38 – 39,

Kawamura) and stores log records on a second set of storage volumes (Col. 5, lines 39

– 41, Kawamura); restores consistency between the log records and the data during a

restart (Col. 3 and 10, lines 56 – 64 and 1 – 2, Kawamura), and while a backup system

lock is held by a backup utility (Col. 9, lines 33 – 34, Kawamura), continues updating

objects except (Col. 9, lines 47 – 50, Kawamura) for suspending actions that change an

external file system catalog (Col. 9, lines 33 – 35, Kawamura[1]), suspending writing

updates of objects that extend across a storage volume boundary (Col. 9, lines 52 – 56,

Kawamura).

Regarding Claim 9, 17, and 26, Kawamura discloses an article of manufacture

comprising computer usable media including at least one computer program recorded

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[1] Kawamura discloses that when the buffer is locked any input or output operation will be inhibited for the external storages. This implies that the input or output operations are actions which can change an external file system catalog.

therein that is capable of causing a computer system to perform a method of operating

a database management system comprising the steps of:

modifying data in the database management system using a write-ahead logging

protocol (Col. 6, lines 36 – 42, Kawamura);

restoring consistency between log records and the data during a restart (Col. 3

and 10, lines 56 – 64 and 1 – 2, Kawamura);

storing data on a first set of storage volumes (Fig. 2, item Database 36a and

Database 36b, Col. 5, lines 37 – 39, Kawamura) and storing log records on a second

set of storage volumes (Fig. 2, item Log File 37, Col. 5, lines 39 – 41, Kawamura);

continuing to update the data (Col. 9, lines 47 – 50, Kawamura) while the backup

system lock is taken (Col. 9, lines 31 – 34, Kawamura), except for suspending actions

that change an external file system catalog (Col. 9, lines 33 – 35, Kawamura[2]), and

except for suspending writing updates of objects that extend across a storage volume

boundary (Col. 9, lines 52 – 56, Kawamura).

Kawamura also discloses a backup system lock that, when is taken, suspends

transactions (Col. 9, lines 7 – 10, Kawamura). However, Kawamura does not explicitly

disclose freezing a REDO log point in checkpoint information while the backup system

lock is taken (Claim 1, 9, 17, and 26). On the other hand, Mosher discloses a system

and method for backing up data, including a REDO log point in checkpoint information

(Col. 8, lines 43 – 46 and 50 – 52, Mosher). It would have been obvious to one of

ordinary skill in the art at the time the invention was made to modify Kawamura's

system and method to include the freezing transactions, such as, a REDO log point in

check point information, based upon the disclosure of Mosher for the purpose of

providing consistency and stability between re-updates done to a database while a

backup lock is was taken. Skilled artisan would have been motivated to do so, as

suggested by Mosher (Col. 2, lines 11 – 16, Mosher), to provide both local and

distributed (or network) consistency after a failure. In addition, based upon Mosher

disclosure, one of ordinary skill in the art at the time the invention was made would have

been motivated to do so in order to provide reliable information to users of a database

management system. Both of the references Kawamura and Mosher teach features that

are directed to analogous art and they are directed to the same field of endeavor of

database management system, such as, back up procedures, and data consistency

operations during failure. This close relation between both of the references highly

suggests an expectation of success.

Regarding Claim 2, the Kawamura and Mosher combination (hereinafter

"Kawamura/Mosher") discloses a database management system, further comprising a

backup utility that obtains the backup system lock before starting a backup process (Fig.

14, item 408, Col. 11, lines 9 – 10, Kawamura); copies the first set of storage volumes

to a first set of backup volumes (Fig 14, item 409, lines 10 – 12, Kawamura); records

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[2] Kawamura discloses that when the buffer is locked any input or output operation will be inhibited for the
external storages. This implies that the input or output operations are actions which can change an
external file system catalog.

information identifying the first set of backup volumes in a dataset (Col. 6, lines 34 – 38,

the update related to the update is written in the LSN field, Kawamura).

Regarding Claim 3, Kawamura/Mosher discloses a database management

system, wherein the backup utility copies the second set of storage volumes to the

backup medium (Fig. 2 and 21, items 16, and 37 and 2710, lines 64 – 67, Kawamura;

Fig. 2, items 96, 88, and 74a, Col. 4, lines 26 – 27, Mosher); and records backup

volume information for the second set of storage volumes in the dataset (Fig. 21, item

2710, col. 14, lines 67, Kawamura; Fig. 2, items 96, 88, and 70, Col. 4, lines 25 – 26,

Mosher).

Regarding Claim 4, Kawamura/Mosher discloses database management system

further comprising a restore utility that performs a point-in-time recovery (Fig. 8, items

366, Col. 8, line 19, Mosher) using the data from the first set of backup volumes (Col. 8,

lines 19 – 20, Mosher), a user specified point-in-time (Col. 4, lines 14 – 16, Mosher[3]),

and the logs on the second set of storage volumes (Col. 8, lines 21 – 23, header to

identify a particular SIT file, Mosher).

Regarding Claim 5, Kawamura/Mosher discloses a database management

system wherein the restore utility marks a first object as recovery-pending when a log

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[3] Mosher discloses that the system will receive user requests for storing and restoring. In addition Mosher teaches a system comprising with a Timestamp feature (see Fig. 8, items 366, Col. 8, lines 19) added to the Extractor. The exactor is an entity that reads data to be stored and/or restored (see Fig 2, items 80, 82, 84, 86).

record identifies the first object as having been updated without log records (Col. 10,

lines 26 – 28 and 56 – 60, Mosher) so that subsequent restoration of the first object can

be made from an image copy (Col. 10, lines 60 – 61, Mosher).

Regarding Claim 6, 14, and 23, Kawamura/Mosher discloses a database

management system wherein the mainline database system writes log records to

identify objects that have been updated without log records (Col. 10, lines 24 – 29,

Mosher) and writes log records to identify objects that have been created, extended

and/or deleted (Col 6 and 10, lines 17 – 23 and 20 – 24, Mosher).

Regarding Claim 7, Kawamura/Mosher discloses a database management

system wherein the mainline database system stores checkpoint information

periodically (Fig. 11, Col. 8, lines 40 – 42, Mosher) and the backup utility records a log

apply starting point corresponding to a last checkpoint information storage point (Col. 8,

lines 43 – 46, Mosher).

Regarding Claim 8, Kawamura/Mosher discloses a database management

system wherein the mainline database system obtains the backup system lock (Col. 9,

lines 33 – 34, Kawamura) before updating objects that change an external file system

catalog (Col. 9, lines 33 – 35, Kawamura[4]) or that extend across a storage volume

boundary (Col. 9, lines 52 – 56, Kawamura).

Regarding Claim 10, Kawamura/Mosher discloses a database management

system further comprising:

means for obtaining the backup system lock before starting a backup process

(Fig. 14, item 408, Col. 11, lines 9 – 10, Kawamura); for copying the first set of storage

volumes to a first set of backup volumes (Fig 14, item 409, lines 10 – 12, Kawamura);

and for recording information identifying the first set of backup volumes in a recovery

control dataset (Col. 6, lines 34 – 38, the update related to the update is written in the

LSN field, Kawamura) and in an external file system's control dataset (Col. 5, lines 66 –

67, Kawamura).

Regarding Claim 11, Kawamura/Mosher discloses a database management

system further comprising means for copying the second set of storage volumes to a

second set of backup volumes (Fig. 2 and 21, items 16, and 37 and 2710, lines 64 – 67,

respectively, Kawamura; Fig. 2, items 96, 88, and 74a, Col. 4, lines 26 – 27, Mosher);

and means for recording information identifying the second set of backup volumes in the

recovery control dataset (Fig. 21, item 2710, col. 14, lines 67, Kawamura; Fig. 2, items

96, 88, and 70, Col. 4, lines 25 – 26, Mosher) and in the external file system's control

dataset (Fig. 2, item 16 and 37, Col. 5, lines 64 – 67, Kawamura).

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[4] Kawamura discloses that when the buffer is locked any input or output operation will be inhibited for the

Regarding Claim 12, Kawamura/Mosher discloses a database management

system further comprising means for restoring data from the first set of backup volumes

to the first set of storage volumes (Fig 14, item 409, lines 10 – 12, Kawamura; Col. 3,

lines 64 – 67, Mosher) and for performing a point-in-time recovery using a user

specified point-in-time (Col. 4, lines 14 – 16, Mosher[5]), and the logs on the second set

of storage volumes (Col. 8, lines 21 – 23, header to identify a particular SIT file,

Mosher).

Regarding Claim 15, Kawamura/Mosher discloses a database management

system further comprising means for storing checkpoint information periodically (Fig. 11,

Col. 8, lines 40 – 42, Mosher) and the means for backing up the data further comprises

means for recording a log apply starting point corresponding to a last checkpoint

information storage point (Col. 8, lines 43 – 46, Mosher).

Regarding Claim 16, Kawamura/Mosher discloses a database management

system further comprising means for obtaining the backup system lock (Col. 9, lines 33

– 34, Kawamura) before updating objects that change an external file system catalog

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external storages. This implies that the input or output operations are actions which can change an
external file system catalog.
[5] Mosher discloses that the system will receive user requests for storing and restoring. In addition Mosher
teaches a system comprising with a Timestamp feature (see Fig. 8, items 366, Col. 8, lines 19) added to
the Extractor. The exactor is an entity that reads data to be stored and/or restored (see Fig 2, items 80,
82, 84, 86).

(Col. 9, lines 33 – 35, Kawamura[6]) or that extend across a storage volume boundary

(Col. 9, lines 52 – 56, Kawamura).

Regarding Claim 18, Kawamura/Mosher discloses a method further comprising

the step of backing up the data and wherein the step of backing up the data further

comprises obtaining the backup system lock (Fig. 14, item 408, Col. 11, lines 9 – 10,

Kawamura) and after obtaining the backup system lock, copying the first set of storage

volumes to a first set of backup volumes (Fig 14, item 409, lines 10 – 12, Kawamura).

Regarding Claim 19, Kawamura/Mosher discloses a method further wherein the

step of backing up the data further comprises the step of recording information

identifying the first set of backup volumes in a recovery control dataset (Col. 6, lines 34

– 38, the update related to the update is written in the LSN field, Kawamura) and in an

external file system's control dataset (Col. 5, lines 66 – 67, Kawamura).

Regarding Claim 20, Kawamura/Mosher discloses a method of operating the

database management system further comprising backing up log records, after backing

up the data, by copying the second set of storage volumes to a second set of backup

volumes (Fig. 2 and 21, items 16, and 37 and 2710, lines 64 – 67, respectively,

Kawamura; Fig. 2, items 96, 88, and 74a, Col. 4, lines 26 – 27, Mosher).

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[6] Kawamura discloses that when the buffer is locked any input or output operation will be inhibited for the

Regarding Claim 21, Kawamura/Mosher discloses a method of operating the

database management system further comprising the steps of restoring data from the

first set of backup volumes to the first set of storage volumes (Fig 14, item 409, lines 10

– 12, Kawamura; Col. 3, lines 64 – 67, Mosher) and performing a point-in-time recovery

using a user specified point-in-time (Col. 4, lines 14 – 16, Mosher[7]), and the logs on the

second set of storage volumes (Col. 8, lines 21 – 23, header to identify a particular SIT

file, Mosher).

Regarding Claim 24, Kawamura/Mosher discloses a method of operating the

database management system further comprising storing checkpoint information

periodically (Fig. 11, Col. 8, lines 40 – 42, Mosher) and the step of backing up the data

further comprises recording a log apply starting point corresponding to a last checkpoint

information storage point (Col. 8, lines 43 – 46, Mosher).

Regarding Claim 25, Kawamura/Mosher discloses a method of operating the

database management system wherein the step of continuing to update the data while a

backup system lock is taken further comprises obtaining the backup system lock (Col.

9, lines 33 – 34, Kawamura) before updating objects that change an external file system

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external storages. This implies that the input or output operations are actions which can change an
external file system catalog.

[7] Mosher discloses that the system will receive user requests for storing and restoring. In addition Mosher
teaches a system comprising with a Timestamp feature (see Fig. 8, items 366, Col. 8, lines 19) added to
the Extractor. The exactor is an entity that reads data to be stored and/or restored (see Fig 2, items 80,
82, 84, 86).

catalog (Col. 9, lines 33 – 35, Kawamura[8]) or that extend across a storage volume

boundary (Col. 9, lines 52 – 56, Kawamura).

Regarding Claim 27, Kawamura/Mosher discloses an article of manufacture

wherein the method further comprises the step of backing up the data and wherein the

step of backing up the data further comprises obtaining the backup system lock (Fig. 14,

item 408, Col. 11, lines 9 – 10, Kawamura) and after obtaining the backup system lock,

copying the first set of storage volumes to a first set of backup volumes (Fig 14, item

409, lines 10 – 12, Kawamura).

Regarding Claim 28, Kawamura/Mosher discloses an article of manufacture

wherein the step of backing up the data further comprises the step of recording

information identifying the first set of backup volumes in a control dataset (Col. 6, lines

34 – 38, the update related to the update is written in the LSN field, Kawamura).

Regarding Claim 29, Kawamura/Mosher discloses an article of manufacture

wherein the method further comprises backing up log records, after backing up the data,

by copying the second set of storage volumes to a second set of backup volumes (Fig.

2 and 21, items 16, and 37 and 2710, lines 64 – 67, respectively, Kawamura; Fig. 2,

items 96, 88, and 74a, Col. 4, lines 26 – 27, Mosher).

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[8] Kawamura discloses that when the buffer is locked any input or output operation will be inhibited for the

Regarding Claim 30, Kawamura/Mosher discloses an article of manufacture of

wherein the method further comprises recording information identifying the second set

of backup volumes in the recovery control dataset (Fig. 21, item 2710, col. 14, lines 67,

Kawamura; Fig. 2, items 96, 88, and 70, Col. 4, lines 25 – 26, Mosher) and in the

external file system's control dataset (Fig. 2, item 16 and 37, Col. 5, lines 64 – 67,

Kawamura).

Regarding Claim 31, Kawamura/Mosher discloses an article of manufacture of

wherein the method further comprises the steps of restoring data from the first set of

backup volumes to the first set of storage volumes (Fig 14, item 409, lines 10 – 12,

Kawamura; Col. 3, lines 64 – 67, Mosher) and performing a point-in-time recovery using

a user specified point-in-time (Col. 4, lines 14 – 16, Mosher[9]), and the logs on the

second set of storage volumes (Col. 8, lines 21 – 23, header to identify a particular SIT

file, Mosher).

Regarding Claim 13, 22, and 32, Kawamura/Mosher discloses an article of

· manufacture, wherein the step of performing a point-in-time recovery further comprises

the steps of marking a first object as recovery-pending when a log record identifies the

first object as having been updated without log records (Col. 10, lines 26 – 28 and 56 –

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external storages. This implies that the input or output operations are actions which can change an
external file system catalog.

[9] Mosher discloses that the system will receive user requests for storing and restoring. In addition Mosher
teaches a system comprising with a Timestamp feature (see Fig. 8, items 366, Col. 8, lines 19) added to
the Extractor. The exactor is an entity that reads data to be stored and/or restored (see Fig 2, items 80,
82, 84, 86).

60, Mosher) so that subsequent restoration of the first object can be made from an

image copy (Col. 10, lines 60 – 61, Mosher); processing log records identifying a

second object which has been newly created by allocating space for the second object

(Col 9 and 10, lines 1 – 3; respectively, Mosher); processing log records identifying a

third object which has been newly extended by allocating additional space for the third

object (Col. 13, lines 4 – 8, Mosher[10]) ; processing log records identifying a fourth object

which has been deleted by freeing space for the fourth object (Col. 9, lines 33 – 38,

Mosher) ; and setting a mode to indicate that the point-in-time recovery has completed

(Col 13, lines 23 – 27, TakeOver_Completed Flag is set, Mosher).

Regarding Claim 33, Kawamura/Mosher discloses an article of manufacture of

wherein the step of continuing to update the data while a backup system lock is taken

further comprises obtaining the backup system lock (Col. 9, lines 33 – 34, Kawamura)

before updating objects that change an external file system catalog (Col. 9, lines 33 –

35, Kawamura[11]) or that extend cross a storage volume boundary (Col. 9, lines 52 – 56,

Kawamura).

(10) Response to Argument

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[10] Mosher discloses that the object will be updated with additional information. This additional information
will have to extend the object.

[11] Kawamura discloses that when the buffer is locked any input or output operation will be inhibited for the
external storages. This implies that the input or output operations are actions which can change an
external file system catalog.

Appellant argues that; "neither of the cited reference teaches the specific actions

claimed". Specifically, appellant argues that; "the word "backup" does not even appear

in searchable text of the Kawamura patent, so it is clear that Kawamura is describing

the standard operation of the database program, not a backup process".

Examiner respectfully disagrees. The combination of Kawamura in view of

Mosher does disclose backup. According to the Academic Press Dictionary of Science

and Technology from Elsevier Science & Technology (Copyright 1992, 1996 by

Academic Press), "backup" is defined as; "Computer Technology: Any hardware,

software, or data that can be retrieved in the event of system failure or user error".

Thus, both of the references of the combination of Kawamura in view of Mosher do

disclose backup utilities and processes (Page 8 and 10, lines 51 – 55 and 1 – 2;

respectively, "… namely the database can be restored and hence the system operation

can be continued even when the system is stopped due to e. g. a failure…"; and "…the

system is stopped dues to a failure or a trouble, the database can be restored…";

Kawamura; and Col. 2, lines 29 – 38, "… The present invention is directed towards the

takeover operations on the backup nodes in this circumstance …", Mosher).

Appellant argues that the prior art fails to disclose; "backup system lock is held

by a backup utility", and further argues that the prior art fails to disclose; "freezing a

REDO log point in checkpoint information while the backup system lock is taken …".

Examiner respectfully disagrees. The applied art does disclose a backup system

lock. As stated above, both of the applied references of the combination of Kawamura in

view of Mosher disclose a "backup" in the system. In addition, the specific limitation of

"backup system lock" is taught by Kawamura. Wherein the lock reserved for the buffer

pool as disclosed by Kawamura (Col. 9, lines 7 – 10, Kawamura) corresponds to the

back up system lock claimed. According to Kawamura, this lock is used together with

syncpoints (Col. 8, lines 55 – 57, Kawamura) and buffers to provide a backup procedure

for the database, particularly, by providing data integrity during data restore (Col. 9,

lines 1 – 7, Kawamura). Consequently, this lock represents the back up system lock

claimed.

Additionally, the combination of Kawamura in view of Mosher does disclose the

limitation of: "backup system lock is help by a backup utility" (Col. 7 and 9, lines 64 – 67

and 31 – 34; "while the buffer pool is in the locked stated..."; wherein the database

management system corresponds to the backup utility as claimed, Kawamura).

Furthermore, the combination of Kawamura in view of Mosher does disclose

freezing a REDO log point in checkpoint information (Col. 8, lines 43 – 46 and 50 – 52,

Mosher) while a backup system lock is taken (Col. 9, lines 31 – 35, Kawamura; and Col.

Col. 8, lines 50 and 52, Mosher). Wherein the step of stopping the updaters, which

includes a redo operation (as disclosed in reference Col. 8, lines 43 – 46, Mosher),

corresponds to the step of freezing the REDO log point in checkpoint information as

claimed. And wherein the lock (as disclosed by Kawamura, Col. 9, lines 1 – 10) and the

StopUpdaterCompleted flag (as disclosed by Mosher, Col. 8, lines 50 – 52) correspond

to the backup system lock claimed.

Appellant argues that the prior art fails to disclose; "a backup method and does not teach "continuing to update the data..." during a backup operation" and specifically fails to disclose; "continue updating objects except for ..."; because the prior art "has no teaching that distinguishes between actions that change an external file system catalog and updates of objects that extend across a storage volume boundary" and does not teach; "decision making process..".

Examiner respectfully disagrees. It is noted that the features upon which applicant relies (i.e., "distinguishes between actions that change an external file system catalog and updates of objects ..."; "continuing to update the data ..."; "decision making process...", and "backup operation") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

However, the combination of Kawamura in view of Mosher does disclose continues updating objects except for (Col. 9, lines 36 – 38 and 47 – 50; "thanks to this provision, the processing of transactions awaiting the unlocking of the buffer pool can be continuously executed ..."; and "while one of the output pages is being written in the database; there may possibly be achieved a write operation due to another transaction..."; wherein Kawamura's write operation includes updating objects as disclose in Col. 4, lines 20 – 23; Kawamura) for suspending actions that change an external file system catalog (Col. 9, lines 33 – 35, Kawamura). Kawamura discloses that

when the buffer is locked any input or output operation will be inhibited for the external

storages. Examiner interprets the step of inhibiting as the step of suspending as

claimed; and the input or output operations for the external storages as actions which

change an external file system catalog as claimed. In addition, the applied art does

disclose; "suspending writing updates of objects that extend across a storage volume

boundary (Col. 9, lines 52 – 56, Kawamura). Wherein the write operation achieved for

another transaction corresponds to the writing updates of that extend across storage

volume boundary as claimed.

In response to applicant's argument that Mosher and Kawamura is nonanalogous

art, it has been held that a prior art reference must either be in the field of applicant's

endeavor or, if not, then be reasonably pertinent to the particular problem with which the

applicant was concerned, in order to be relied upon as a basis for rejection of the

claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir.

1992). In this case, both of the applied arts Kawamura and Mosher are in the field of

the applicant endeavor of database management systems, such as, log records,

updating; and are also pertinent to the particular problem which the applicant was

concerned of backing up (See-first argument regarding "backup" in this Office Action as

discussed above, and Page 8 and 10, lines 51 – 55 and 1 – 2; respectively, "… namely

the database can be restored and hence the system operation can be continued even

when the system is stopped due to e. g. a failure…"; and "…the system is stopped dues

to a failure or a trouble, the database can be restored…"; Kawamura; and Col. 2, lines

29 – 38, "… The present invention is directed towards the takeover operations on the

backup nodes in this circumstance …", Mosher).

With respect to the claimed limitation; "backup utility that obtains the backup

system lock before starting a backup process; copies the first set of storage volumes to

a first set of backup volumes; records information identifying the first set of backup

volumes in a dataset", appellant argues that "Kawamura does not teach a backup

process at all", and therefore "this reference is unjustified"; and argues that; "the

referenced sections are devoid of any action that corresponds to applicant claim

element: 'copies the first set…'" and: "records information identifying the first …".

Examiner respectfully disagrees. As previously discussed in this Examiner's

Answer, both of the references of the combination of Kawamura in view of Mosher

disclose backup processes. Additionally, the combination of Kawamura in view of

Mosher does disclose the claimed limitation of: backup utility that obtains the backup

system lock before starting a backup process (Fig. 14, item 408, Col. 11, lines 9 – 10;

"… the lock counter 328 is cleared to zero (step 407), and the buffer pool is unlocked

(step 408), After the buffer pool is unlocked, the pages is immediately written…";

Kawamura). Wherein the step of unlocking the buffer pool corresponds to the step of

obtaining the backup system lock as claimed.

The combination of Kawamura in view of Mosher further discloses the limitations of:

copies the first set of storage volumes to a first set of backup volumes (Fig 14, item 409,

Col. 11, lines 10 – 12, "...when the data of the buffer pool 34 is written in the database

36 ..." and "... the page is immediately written in the database 16..."; as disclosed by

Kawamura in Fig. 2, item 16 include databases 36a, and 36b; Kawamura). Wherein the

databases 36a, and 36b correspond to the first set of backup volumes as claimed.

Furthermore, the combination of Kawamura in view of Mosher does disclose: records

information identifying the first set of backup volumes in a dataset (Col. 6, lines 34 – 42,

"...it is guaranteed that the update indicated by the LSN is reflected in the database 36.

It is to be appreciated that the log is written in the log file 37...", Kawamura). Wherein

the log, which according to Kawamura includes the LSN field and is related to the

update and to the data being written in the database 36 (Col. 6, lines 36 – 38,

Kawamura), corresponds to the records information identifying the first set of backup

volumes as claimed.

Appellant argues that the prior art fails to disclose; "backup utilities and,

therefore, does not teach having a backup utility copy the second set of storage

volumes to a backup medium". Appellant further argues that since the prior art fails to

disclose; "backup volume information for a second set of storage volumes", the prior art

also "does not teach copying such information as claimed".

Examiner respectfully disagrees. First, as stated in this Examiner's Answer

above, the combination of Kawamura in view of Mosher does disclose backup utilities.

Second, the rejected claim recites: copying the second set of storage volumes to a

backup medium, but not the specific argued feature of: copying backup volume

information for a second set of storage volumes. Although the claims are interpreted in

light of the specification, limitations from the specification are not read into the claims.

See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). However, the

combination of Kawamura in view of Mosher does disclose the claimed limitation of:

"records backup volume information ..." (Fig. 21m item 2710, Col. 14, lines 64 – 67,

wherein the Log data that is further written in the log file 37 corresponds to the backup

volume information as claimed, Kawamura; and Fig. 2, items 96, 88, and 70, Col. 4,

lines 21 – 26, "... store records derived therefrom in either the Master Image Trail

(MIT)...or the Secondary Image Trail (SIT).. The MIT 70, 72 generally contains timing

and transaction state of the audit records while the SIT...generally contains the update

and undo audit records ..."; wherein the MIT corresponds to the backup volume

information as claimed; Mosher).

Appellant's arguments directed towards the rejection of claim 4, reiterated

deficiencies Appellant feels were made in the rejection of the independent claim, and do

not address any new points. Therefore the examiner submits that if the rejection of the

independent claims is deemed proper, the rejection of claim 4 should also be updaheld.

Appellant argues that the prior art fails to disclose; "marking as recovery-pending", fails to disclose; "the use of log records identifies the first object as having been updated without log records", and fails to disclose; "restoration of the recovery-pending object from an image copy".

Examiner respectfully disagrees. It is noted that the features upon which applicant relies (i.e., "use of log records...") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

However, the applied art does disclose; "marking as recovery pending" and "a log record identifies the first object as having been updated without log records" (Col. 10, lines 62 – 67, "... If the record is not a synchronization record as determined in step 556, an entry marked as "unknown" is added to the TST, in step 554, if there is no information regarding the transaction in the TST..."; Mosher). Examiner interprets the step of marking as unknown as the step of marking as recovery pending as claimed, because, as stated by the applied art (Col. 6, lines 17 – 22, Mosher), Mosher discloses marking the objects as committed, aborted, and unknown (wherein the examiner interprets the states on committed and aborted as the final states, and the unknown as the intermediate state, that has not being committed and or aborted; and therefore is pending).

Furthermore, the applied art does disclose; restoration of the recovery-pending object from an image copy (Col. 10 and 15, lines 60 – 61 and 55 – 66; " a subsystem

loads its own Local Commit List into memory and the loads, in step 702, the newly

formed Master Commit2 List into memory..."; wherein Mosher's Master Commit2 List

contains the unknown transactions; Mosher).

With respect to the limitation; "writes log records to identify objects that have

been updated without log records and writes log records to identify objects that have

been created, extended and/or deleted", appellant argues that the citation presented by

the examiner "is not teaching anything about logging".

Examiner respectfully disagrees. The argued claim recites: "log records", as

opposed to "logging". The citations presented by the examiner have been included in

additionally to the reasoning and citations presented to reject independent claim 1.

As shown in the rejection of independent claim 1, the combination of Kawamura in view

of Mosher does disclose the log records as claimed (Col. 6, lines 34 – 42, "...it is

guaranteed that the update indicated by the LSN is reflected in the database 36. It is to

be appreciated that the log is written in the log file 37...", Kawamura; and Col. 1 and 4,

lines 30 – 35 and 25 – 27; respectively, wherein Mosher's disclosure teaches that the

audit records are related to the log file; Mosher).

With respect to the limitation; "obtains the backup system lock before updating

objects that change an external file system catalog or that extend across a storage

volume boundary", appellant argues that "since the referenced section only refers to buffer pool locks, this again reflects the mistaken argument that applicants' backup system lock is equivalent to Kawamura's buffer pool lock", and that; "Kawamura's teaching on when the DBMS would obtain the buffer pool lock does not match applicants' claimed conditions of updating objects 1) that change an external file system catalog or 2) that extend across a storage volume boundary".

Examiner respectfully disagrees. As previously shown in this Examiner's Answer, the combination of Kawamura in view of Mosher does disclose the backup system lock, which as discussed above, corresponds to the buffer pool locks disclosed in the applied art (See response to argument of claim 1). Furthermore, the combination of Kawamura in view of Mosher does disclose: obtains the backup system lock (Col. 9, lines 33 – 34, Kawamura) …updating objects that change an external file system catalog (Col. 9, lines 33 – 35; as previously discussed, Kawamura discloses that when the buffer is locked any input or output operation will be inhibited for the external storages. Examiner interprets the input or output operations for the external storages as actions which change an external file system catalog as claimed; Kawamura); or that extend across a storage volume boundary (Col. 9, lines 52 – 56; Wherein the write operation achieved for another transaction corresponds to the writing updates of that extend across storage volume boundary as claimed; Kawamura).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the

Related Appeals and Interferences section of this examiner's answer.

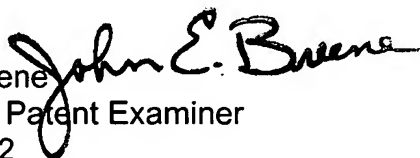For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Giovanna B. Colan
Examiner
Art Unit 2162

Conferees:

John E. Breene
Supervisory Patent Examiner
Art Unit 2162

John Cottingham
Supervisory Patent Examiner
Art Unit 2167

An appeal conference was held on 02/28/2007, and it was agreed to proceed to

the board of appeals.